



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

MW

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,359	03/16/2001	Akihiro Goto	Q63491	7871
7590	01/30/2004		EXAMINER	
Sughrue Mion Zinn Macpeak & Seas 2100 Pennsylvania Avenue NW Washington, DC 20037-3202			DONG, DALEI	
			ART UNIT	PAPER NUMBER
			2875	
DATE MAILED: 01/30/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/787,359	GOTO ET AL.
	Examiner	Art Unit
	Dalei Dong	2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 December 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 August 2003 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. 09/787,359.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-3 rejected under 35 U.S.C. 112, first paragraph, because the best mode contemplated by the inventor has not been disclosed. Evidence of concealment of the best mode is based upon the Applicant claiming a powder of hydrogen desorbed metal hydride and then a hydrogen desorbed metal hydride would be merely a metal and not metal hydride as claimed.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,858,479 to Saito.

Regarding to claims 1-12, Saito discloses “in surface treating method by electric discharge, an electrode is formed by compressing titanium (Ti). In an electric discharge

using this electrode, Ti pyrochemically reacts with carbon generated from a working fluid which is thermally decomposed. Then, Ti becomes TiC (titanium carbide) (*metal carbide*), that is a material of very high hardness, and is deposited on a workpiece or a base metal to form a coating thereon. At this time, a metal like Co (cobalt) which can become a binder is added to Ti as a compressed electrode material" (column 1, lines 28-37).

Saito also discloses "surface treating method of the invention uses TiH<sub>sub.2</sub> (*metal hydride*) green compact electrode for electric discharge machining. The TiH<sub>sub.2</sub> green compact electrode is made by compressing powders of TiH<sub>sub.2</sub> having a predetermined grain size under a prescribed pressure. The green compact electrode is normally formed into a disc shape of a fixed diameter and thickness. Then, the disc shaped green compact is joined to a leading end of a solid metal electrode such as a copper rod via a conductive adhesive. Thus, an electric discharge electrode of TiH<sub>sub.2</sub> is obtained. The TiH<sub>sub.2</sub> green compact electrode is used for surface treatment of a predetermined hard metal as a workpiece. In such treatment, an electric discharge is generated in a working fluid between the TiH<sub>sub.2</sub> green compact electrode and the hard metal under a fixed condition. The working fluid contains therein carbon or includes a polymeric material which is thermally decomposed to generate carbon. Specifically, the polymeric material is composed of a mineral oil and fat or a vegetable oil and fat. This processing corresponds to the primary processing of the conventional surface treating processing shown in step S1 of FIG. 1, though the processing conditions are different therefrom" (column 5, lines 12-33).

Saito further discloses "hydrogen begins to separate from TiH<sub>2</sub> at a temperature of 300.degree. C. or more (*desorbing hydrogen in the metal hydride*). It is supposed that a surface of the workpiece at a discharge point is kept at its boiling point during the electric discharge, which usually continues for 0.1 microsecond to 1,000 microsecond. Then, TiH<sub>2</sub> is completely decomposed" (column 5, lines 37-42).

Saito further yet discloses, "a surface of the workpiece is initially cleaned by the hydrogen at nascent state, then the TiH<sub>2</sub> powders are deposited on such a clean workpiece metal surface. After a first cycle of processing, all the workpiece metal surface is coated with Ti or TiC. Here, TiC is made by chemical combination of Ti with carbon due to oil decomposition. Then, such a Ti or TiC surface defines a workpiece surface to be treated by the following electric discharge. This means that there are no particles covered by such Ti as contains TiO<sub>2</sub>, contrary to the prior art. Therefore, deposited layers obtained by the following coating steps are joined to the first layer with very strong adhesion. From the above facts, the coating layer in the present embodiment shows extremely strong adhesion to the hard metal. An abrasion test proves that it shows excellent antiwearing effects which have not been obtained conventionally" (column 5, line 65 to column 6, line 13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have compress mold the metal carbide and metal hydride of Saito to form an electrode for electric discharge surface treatment to provide a surface treating method by electric discharge machining that makes material powders deposited well on a work piece like a sintered hard meal with strong adhesion, that prevents short circuits

during processing and processing efficiency and finally provides a fine and beautiful finished surface.

Regarding to claims 13-16, Saito disclosed the claimed invention except for the claimed specific mixing ratio of two different metal powders. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have adjust the mixing ratio of the two metal powders in accordance with the desired chemical characteristics of the electrode, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

#### ***Response to Arguments***

5. Applicant's arguments filed December 12, 2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that Saito reference fails to teach or suggest an electrode which in its final form does not contain TiH<sub>2</sub>; Examiner asserts that Applicant merely claiming desorbing hydrogen and fails to claim the complete desorption of the hydrogen from the final form of the electrode, further no where in the Disclosure does the Applicant support such claim of complete desorption of the hydrogen from the final form of the electrode. Applicant merely discloses desorbing hydrogen from the electrode, no where does the Applicant discloses the amount of the hydrogen being desorbed from the final form of the electrode. Also, Applicant does not claim the

electrode in its “final” stage, and thus Examiner interprets that the electrode can be at any stage during the manufacturing process. Further, Examiner asserts that Saito reference teaches the desorbing of the hydrogen where Saito teaches the complete separation of titanium and hydrogen and only titanium is added to the final form of the electrode and the hydrogen is merely used as cleaning particle and being removed. Thus, Examiner asserts that the Saito reference is valid and maintains the rejection

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (571)272-2370. The examiner can normally be reached on 8 A.M. to 5 P.M..

Art Unit: 2875

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571)272-2378. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.  
January 22, 2004



Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800